



Mississippi

Burden of Cancer Report

Statistics For Cancer Disease In Mississippi

April, 2005

Acknowledgments

American Cancer Society
Mississippi Partnership for Comprehensive Cancer Control
University of Mississippi, School of Pharmacy, Department of Pharmacy Practice
Mississippi Department of Health
 Office of Preventive Health
 Office of Communications
 Office of Health Informatics
 Office of Policy and Planning

Useful web sites

Mississippi Department of Health: <http://www.msdh.state.ms.us>
Mortality data: <http://wonder.cdc.gov>
Behavior Risk Factor Surveillance Survey (BRFSS): <http://www.cdc.gov/brfss>
American Cancer Society: <http://www.cancer.org>
National Cancer Institute: <http://www.cancer.gov/>
Cancer Control Planet: <http://cancercontrolplanet.cancer.gov/>
Centers for Disease Control and Prevention: <http://www.cdc.gov/cancer>
Women's Cancer Network: <http://www.wcn.org/>
The DASH Eating Plan: <http://www.nhlbi.nih.gov/health/public/heart/hbp/dash>

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Executive Summary

- * Cancer is the second leading cause of death in Mississippi.
- * Smoking is the most preventable cause of death in our society, accounting for 30% of all cancers and 87% of lung cancer deaths, nationally.
- * In Mississippi, the following counties have higher cancer death rates than the U.S cancer death rate based on 2001 data: Madison, Yazoo, Tishomingo, Newton, Lincoln, Covington, Marion, Harrison, Marshall, De Soto, Tunica, Quitman, Coahoma, Sunflower, Bolivar, and Washington.
- * Men have a little less than 1 in 2 lifetime risk of developing cancer; for women, their risk is a little more than 1 in 3.
- * According to 2001 data, Mississippi ranks fifth in the nation for the highest cancer death rate.
- * One third of all cancer deaths are related to nutrition, physical inactivity, obesity, and other lifestyle factors and could be prevented.
- * Nationally, about 77% of all cancers are diagnosed at age 55 and older.
- * Lung, female breast, prostate, and colorectal cancer accounted for over half of all cancer deaths in Mississippi in 2002.
- * Cancers that can be detected by early screening such as breast, colon, rectum, cervix, prostate, testis, oral cavity and skin account for half of all new cancer cases. If all of these cancers were diagnosed at a localized stage through regular screenings, 5 year survival would increase to about 95%.
- * About 5% to 10 % of cancers are hereditary.
- * Nationally, this year about 556,500 Americans are expected to die of cancer, more than 1,500 people per day.
- * The National Institute of Health estimates overall costs for cancer in the year 2002 at \$171.6 billion: \$60.9 billion for direct medical costs (total of all health expenditures); \$15.5 billion for indirect morbidity costs (cost of lost productivity due to illness); and \$95.2 billion for indirect mortality costs (costs of lost productivity due to premature death).

Introduction

Cancer is a group of more than 100 different diseases, but all are characterized by uncontrolled growth and spread of abnormal cells. Continued, uncontrolled growth will result in death.

Cancer is caused by both external factors (tobacco, chemicals, radiation, and infectious organisms) and internal factors (inherited mutations, hormones, immune conditions, and mutation that occurs from metabolism). Ten or more years often pass between exposures or mutations, and before cancer is detected. Cancer is treated by surgery, radiation, chemotherapy, hormone, and immunotherapy.

Some cancers can be prevented. For example, cancers caused by cigarette smoking and heavy alcohol use are preventable. The American Cancer Society reports that in 2004 more than 180,000 cancer deaths in the U.S. are expected to be caused by tobacco use. Scientific evidence reports that about one-third of the 556,500 cancer deaths expected to occur in the U.S. in 2005 will be related to nutrition, physical inactivity, obesity, and other lifestyle factors and could be prevented. Certain cancers are related to infectious exposures such as hepatitis B virus (HBV), human papilloma virus (HPV), and human immunodeficiency virus (HIV) and could be prevented with behavioral changes, vaccines, or antibiotics. Regular screening examinations by a health care professional can result in the detection of cancers of the breast, colon and rectum, cervix, prostate, oral cavity, and skin at earlier stages, when treatment is more likely to be successful. Cancers that can be detected through early screening represent about half of all new cancers. If these cancers were diagnosed at a localized stage through regular cancer screenings, the 5-year survival rate would increase to about 95%.

Figure 1- Cancer Mortality – Mississippi, 1998-2002

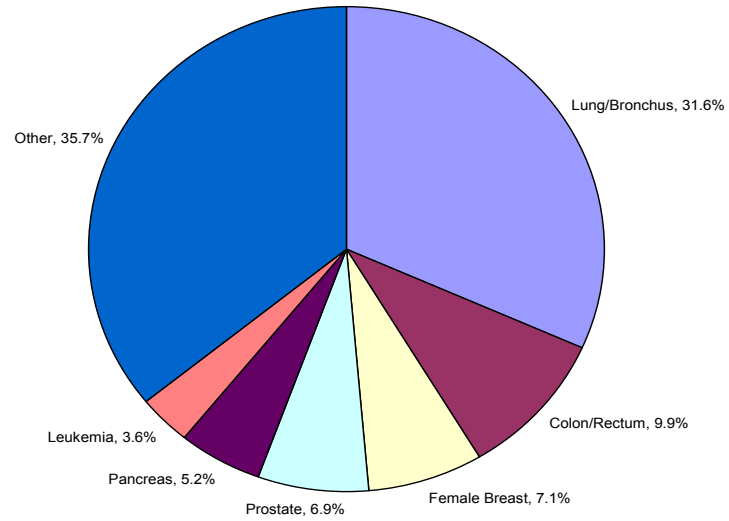
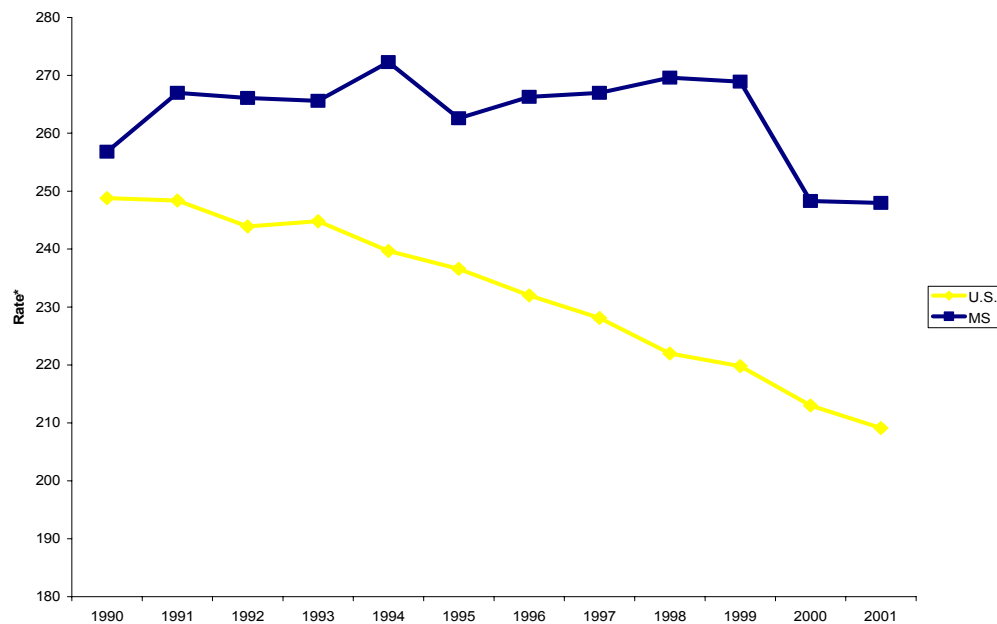


Figure 2- Age Adjusted Cancer Mortality Rates for All Cancer Sites, Mississippi vs. U.S., 1990-2001



*rate per 100,000 population

Cancer Mortality

In 2002, the overall cancer mortality rate in Mississippi was 217.5 per 100,000 people (age-adjusted to the 2000 standard population using the 5-year age groups). On the average, 6,050 Mississippians died from cancer:

- 2752 deaths among women and 3298 deaths among men;
- 4087 deaths among whites and 1963 deaths among non-whites

Table 3. Cancer Mortality for Mississippi, Males vs. Females, 1998-2002

Site	All Males		All Females		Total	
	Cases	Rate	Cases	Rate	Cases	Rate
Oral Cavity and Pharynx	362	6.1	140	1.8	502	3.7
Esophagus	451	7.7	100	1.3	551	4
Stomach	394	7.3	270	3.4	664	4.9
Small Intestine	32	0.6	20	0.3	52	0.4
Colon and Rectum	1,476	27.2	1,508	18.5	2,984	22.1
Liver	442	7.8	301	3.8	743	5.5
Pancreas	767	13.8	805	10	1,572	11.6
Larynx	152	2.7	32	0.4	184	1.3
Lung and Bronchus	6,208	110.1	3,304	42.3	9,512	70.1
Melanoma (Skin)	189	3.3	117	1.5	306	2.3
Female Breast	.	.	2,143	27.9	2,143	27.9
Cervix Uteri	.	.	281	3.7	281	3.7
Uterus	.	.	297	3.7	297	3.7
Ovary	.	.	676	8.6	676	8.6
Prostate	2,044	43.4	.	.	2,044	43.4
Testis	19	**	.	.	19	**
Urinary Bladder	324	6.5	181	2.2	505	3.8
Kidney and Renal Pelvis	377	6.6	232	2.9	609	4.5
Endocrine	49	0.9	70	0.9	119	0.9
Multiple Myeloma	266	4.9	283	3.5	549	4.1
Leukemia	566	10.4	530	6.6	1,096	8.1
Brain and Other Nervous System	422	7.1	337	4.4	759	5.6
Hodgkin's Disease	43	0.7	30	0.4	73	0.5
Non-Hodgkin's Lymphoma	522	9.5	462	5.8	984	7.3
Other Cancer	1,574	28.7	1,320	16.4	2,894	21.4
All Cancers	16,679	305.4	13,439	170.1	30,118	222.7
*Rates per 100,000 population and age-adjusted to the 2000 standard population 5-year age groups.						
**Rates based on less than 20 cases are unstable and therefore suppressed.						

Cancer death rates differ by gender, age group and racial/ethnic groups. Non-whites have higher rates than whites, and men have higher rates than women. In 2002, age-adjusted rates were 35.5% higher for non-white men (361.3 per 100,000) than white men (266.7 per 100,000), and 17.2% higher for non-white women (189.8 per 100,000) than white women (161.9 per 100,000). The exact reasons for these disparities are unknown.

Figure 4. Cancer Deaths, Non-whites - Mississippi, 1998-2002

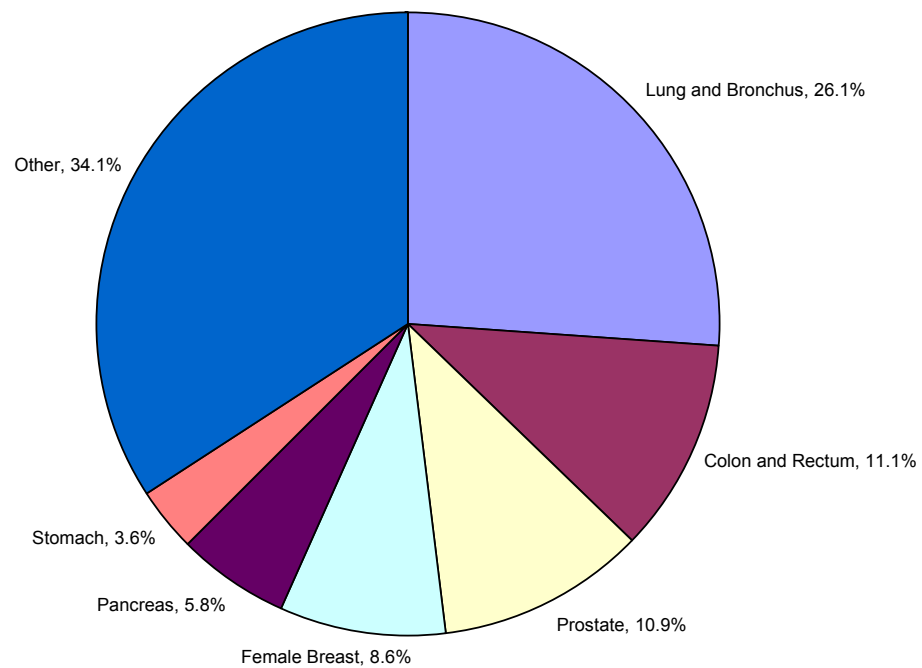


Figure 5. Cancer Deaths, Whites - Mississippi, 1998-2002

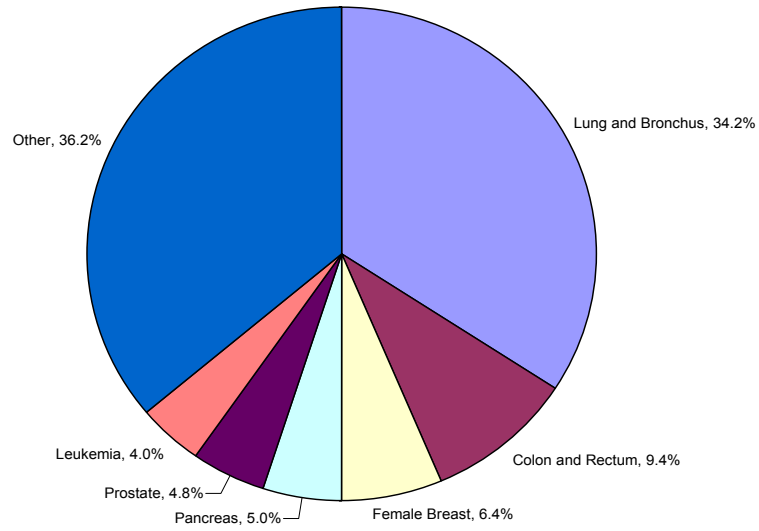


Figure 6. Cancer Deaths, Females- Mississippi, 1998-2002

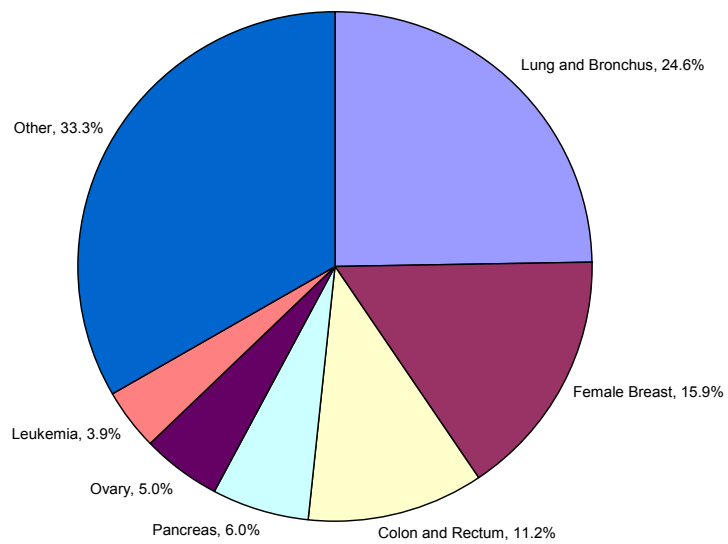
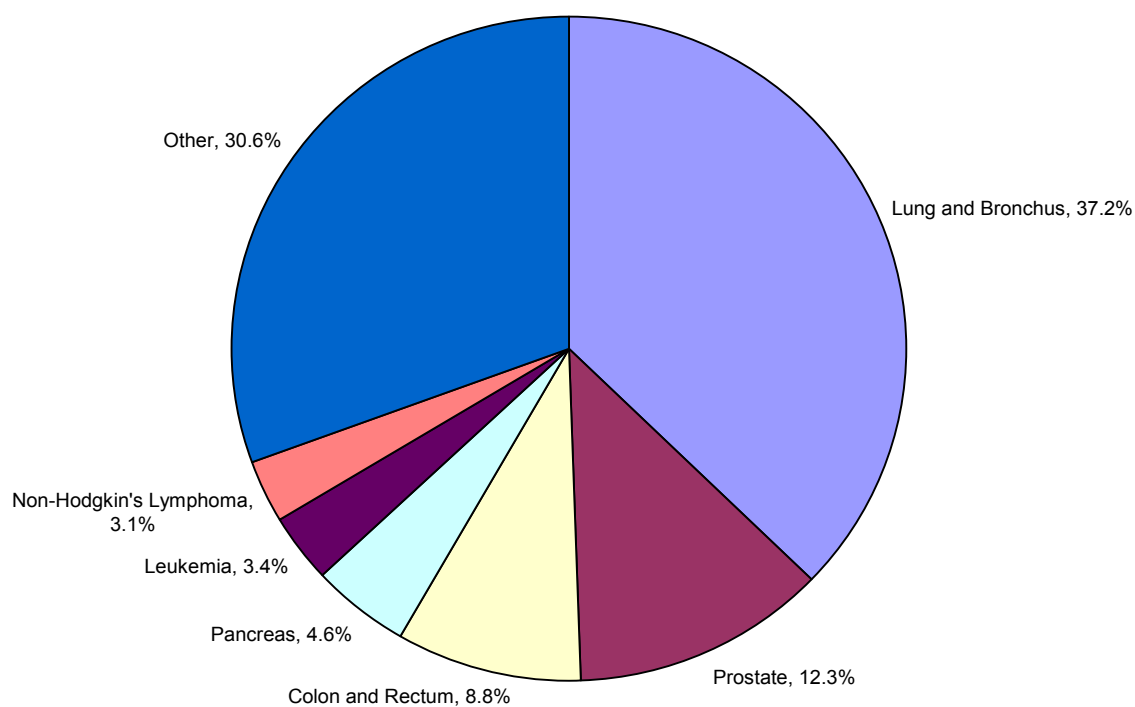


Figure 7. Cancer Deaths, Males - Mississippi, 1998-2002



Cancer is generally a disease of the older population, thus your chance of developing and dying from cancer increases as you age, with large risk increases beginning after the age of 40 and continuing throughout your life. Premature mortality due to cancer is greater for men than women and for non-whites than whites. The largest amount of premature cancer mortality in Mississippi in 2002 occurred in non-whites. Statistics show that 48.7% of all cancer deaths in non-white women and 48.6% in non-white males occurred before age 69.

Figure 8. Age Specific Cancer Mortality – Mississippi, 1998-2002

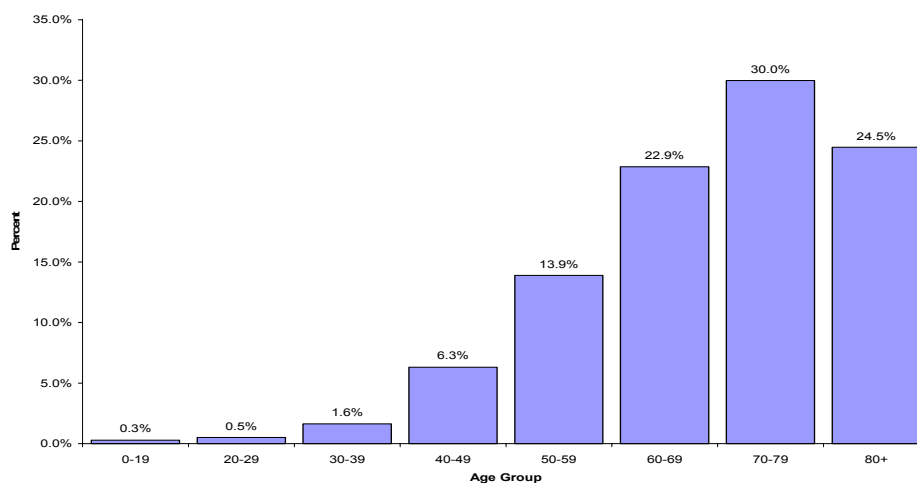


Table 9. Age-Specific Cancer Mortality Rates – Mississippi, 1998-2002

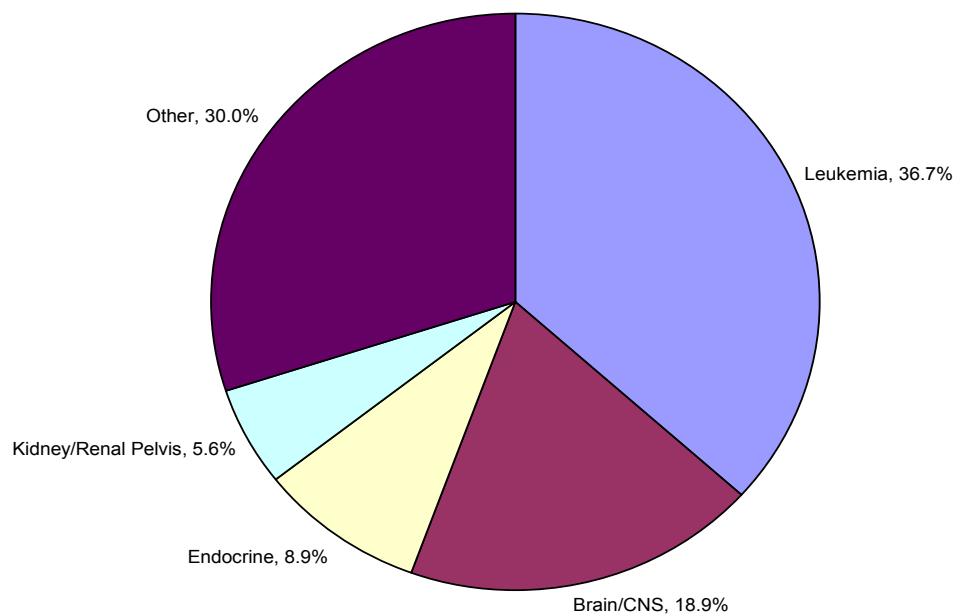
Age at Death	Cases	Rate Per 100,000 Population
0-9	39	1.9
10-19	52	2.4
20-29	153	7.5
30-39	495	25.1
40-49	1904	94.3
50-59	4185	278.9
60-69	6888	650.7
70-79	9031	1166.9
80+	7371	1663.9

Pediatric Cancers

In the U.S., an estimated 9,200 new cancer cases are expected to occur among children ages 0-14 in 2004, resulting in an estimated 1,510 deaths. Despite childhood cancer's rarity, malignancies are second only to accidents as the leading cause of death in children. About one-third of these deaths will be from leukemia. The types of cancers that are common in pediatric patients are different than those in adults. Children may tolerate treatments better than adults do, allowing

more aggressive treatment. However, they may also be at more risk for late toxicities of treatment due to a higher cure rate and a longer lifespan remaining after cure. Cancers in children are often difficult to recognize, but parents should make sure their children receive regular medical checkups and should be alert to any unusual symptoms. These include: unusual mass or swelling, unexplained paleness and loss of energy, sudden tendency to bruise, a persistent / localized pain or limping, prolonged and unexplained fever or illness, frequent headaches with vomiting, sudden eye or vision changes and excessive or rapid weight loss.

Figure 10. Cancer Deaths, Ages 0-19 Mississippi, 1998-2002



Stage of Disease and Survival

Staging is the process of determining the extent of disease progression at the time of diagnosis. Non-whites are less likely to be diagnosed with cancer at the localized stage, when the disease may be more easily and successfully treated, and more likely to be diagnosed at regional and distant stages.

The five-year relative survival rate represents the proportion of persons who are living five years after a diagnosis of cancer. There have been notable improvements in the U.S. five-year relative survival rates for the most common cancers, increasing to 62%. For nearly every cancer type, non-whites have lower five-year relative survival rates than whites at each stage of diagnosis.

Economic Impact

The National Institutes of Health estimates overall costs for cancer in the year 2002 at \$171.6 billion: \$60.9 billion for direct medical costs (total of all health expenditures); \$15.5 billion for indirect morbidity costs (cost of lost productivity due to illness); and \$95.2 billion for indirect mortality costs (costs of lost productivity due to premature death). Mississippi's population represents approximately .99% (or a little less than one percent) of the total U.S. population. Using this proportion of the national annual direct costs for cancer, it is estimated that the total overall annual cost for cancer in Mississippi in 2002 was \$1.7 billion and total direct medical cost was \$ 602.9 million.

Table 11. Estimated Annual Costs of Cancer Care, Mississippi vs. U.S., 2002

Cancer Type	Estimated Annual Costs in the U.S.	Estimated Annual Costs in Mississippi
Total cancer care	\$171.6 billion	\$1.7 billion
Total direct medical costs	\$60.9 billion	\$602.9 million
Direct Medical Costs by Type of Cancer		
Breast cancer	\$5.45 billion	\$53.9 million
Colorectal cancer	\$5.45 billion	\$53.9 million
Lung and bronchus	\$5.00 billion	\$49.5 million
Prostate cancer	\$4.68 billion	\$46.3 million
Cervical cancer	\$1.68 billion	\$16.6 million
Head and neck cancers	\$1.61 billion	\$15.9 million
Melanoma	\$700 million	\$6.9 million

Risk Factors for Cancer

By definition, a risk factor for cancer is a condition or behavior that increases a person's risk of developing cancer, but it does not guarantee that the person will develop the specific disease.

Some risk factors are "modifiable;" in other words, the risk factor can be controlled or reduced, and the risk of developing cancer lessened. Risk factors for cancer that cannot be changed are age (cancer mortality rates increase as age increases), gender (males have higher cancer mortality rates than women), race (non-whites generally have higher rates than whites), family history of cancer at an early age, and previous medical history of cancer. The main modifiable risk factors are smoking, sun exposure, lack of regular physical activity, and being overweight/obese.

Modifiable risk factors are responsible for 75 percent of all cancers. The most common risk factors are discussed below.

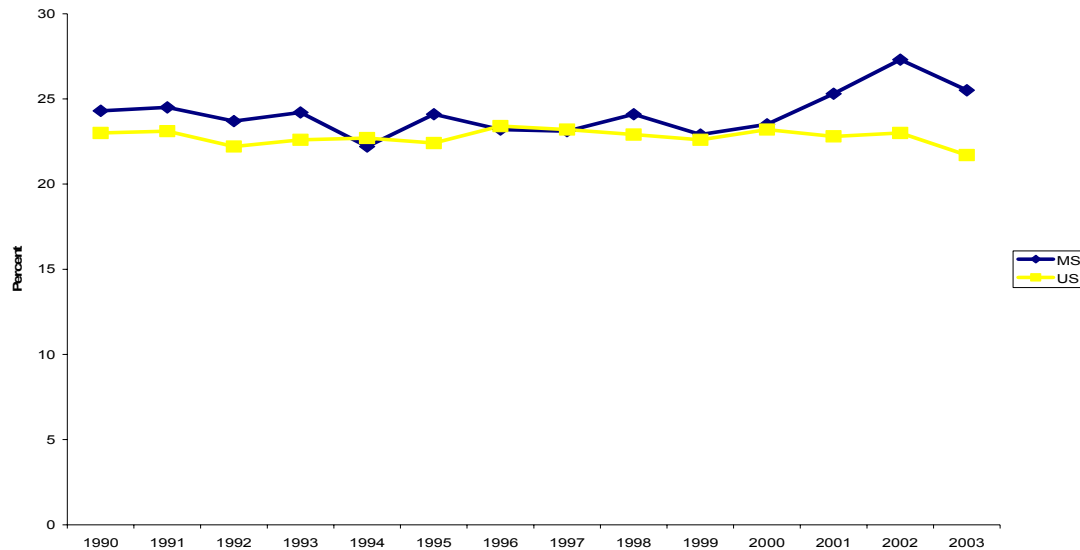
Tobacco use

Cigarette smoking accounts for approximately 30% of all cancer deaths. It is a major cause of cancers of the oral cavity, larynx, pharynx, esophagus, and lung; contributes to the development of cancers of the pancreas, bladder, liver, uterine cervix, kidney, colon and rectum, stomach, and some forms of leukemia. Smoking causes nearly 87% of all lung cancer deaths in the U.S.

Secondhand smoke causes approximately 3,000 lung cancer deaths each year nationally.

More than one quarter (25.5%) of adult Mississippians were current smokers in 2003. This figure has stayed virtually constant since 1990, though it increased slightly from 2000 to 2002 with a slight decrease in 2003. Prevalence rates increased for males, whites, and those with less than a high school diploma. From 1999 to 2003, current smoking rates in Mississippi's public high school students decreased 28% from 32.5% in 1999 to 23.4% in 2003. Interventions to decrease the number of smokers, thus decreasing the effects of tobacco are imperative. Smokeless tobacco use is no safer than cigarette smoking. Smokeless tobacco causes cancers of the mouth and pharynx. Long-term smokeless tobacco users increase their risk of cancers of the cheek and gums up to 50 times.

Figure 12. Current Smoking, Mississippi vs. U.S., 1990-2002



Sun Exposure

The American Cancer Society estimates that during 2004, more than 1 million new cases of basal or squamous cell carcinoma and about 55,100 new cases of malignant melanoma will be diagnosed in the U.S. It is also expected that skin cancer will claim the lives of approximately 10,250 Americans with approximately 7,910 of those deaths being from melanoma. In Mississippi, the 1998-2002 age-adjusted rate for melanoma is 2.3 per 100,000 population. Although death rates from basal cell and squamous cell carcinomas are low, these cancers can cause considerable damage and disfigurement if they are untreated. However, when detected early, approximately 95% of these carcinomas can be cured.

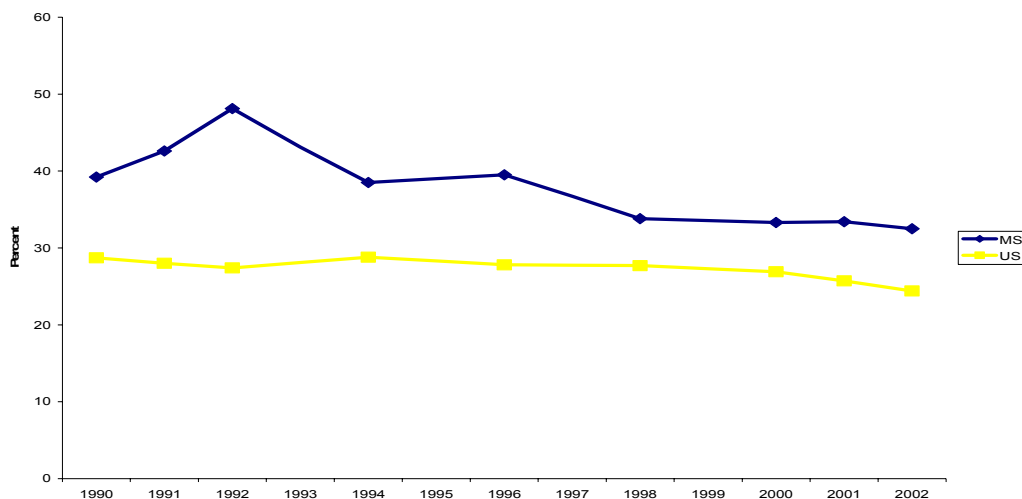
Exposure to the sun's ultraviolet (UV) rays (even if the UV rays do not result in sunburn) appears to be the most important environmental factor involved in the development of skin cancer. UV rays from artificial sources of light, such as tanning beds and sunlamps, are as dangerous as those from the sun and should also be avoided. Although both tanning and burning can increase a person's risk for skin cancer, most Americans do not consistently protect themselves from UV rays. A survey sponsored by the Centers for Disease Control and Prevention (CDC) found that nationally, approximately 43% of white children under age 12 had at least one sunburn during the past year.

Lack of Regular Physical Activity

About one-third of all cancer deaths that occur in the U.S. are due to unhealthy diets and a lack of physical activity. According to the American Cancer Society, adults should be moderately active for 30 minutes for five days a week. To reduce risk of colon cancer and breast cancer, daily requirements should increase.

In 2003, 75.8% of adult Mississippians did moderate physical activity but only 40.4% of adults met recommended guidelines for moderate physical activity. Only 20.2% of adults met recommended guidelines for vigorous physical activity. In 2003, 30.3% of adults reported no physical activity during the last month. This has not changed much over the past 5 years, despite repeated health education messages and recommendations in the news media that people become more active. Ideally, regular exercise habits need to begin in childhood. However, surveys in Mississippi public schools show that this is not happening. In 2003, the percentage of students who attended physical education class daily was 23% (the Healthy People 2010 target is 50%). The percentage of students who participated in moderate physical activity during the past week was 18% (Healthy People 2010 target: 35%), and the percentage of students who participated in vigorous physical activity during the past week was 53% (Healthy People 2010 target: 85%). The percentage of students who watched 2 or fewer hours of TV on an average school day was 46% (Healthy People 2010 target: 75%).

Figure 13. No Leisure Time Physical Activity, Mississippi vs. U.S., 1990-2002



Being Overweight or Obese

Being overweight or obese increases the risk of cancers of the esophagus, breast (postmenopausal women), kidneys, endometrium, and colon. Obesity can increase acid reflux into the esophagus, thus increasing circulation of hormones such as insulin and estrogen which can promote cancer growth. Overall cancer mortality is 10-25% higher for persons with a BMI between 25 and 30, and 50-100% higher for persons with a BMI of 30 or more. The percentage of adult Mississippians who are obese (BMI equal to or greater than 30) has increased steadily since 1990; in 2003, 26.9% of adult Mississippians were obese, and another 35.2% were overweight (BMI 25.0 - 29.9). In 2003, 16% of Mississippi adolescents were obese.

Consuming greater amounts of fruits and vegetables can reduce the risk of certain cancers, such as cancers of the mouth, esophagus, lung, stomach, and colon. High fat diets are associated with an increased risk of cancers of the colon and prostate.

Figure 14. Not Enough Fruits and Vegetables, Mississippi vs. U.S., 1990-2002

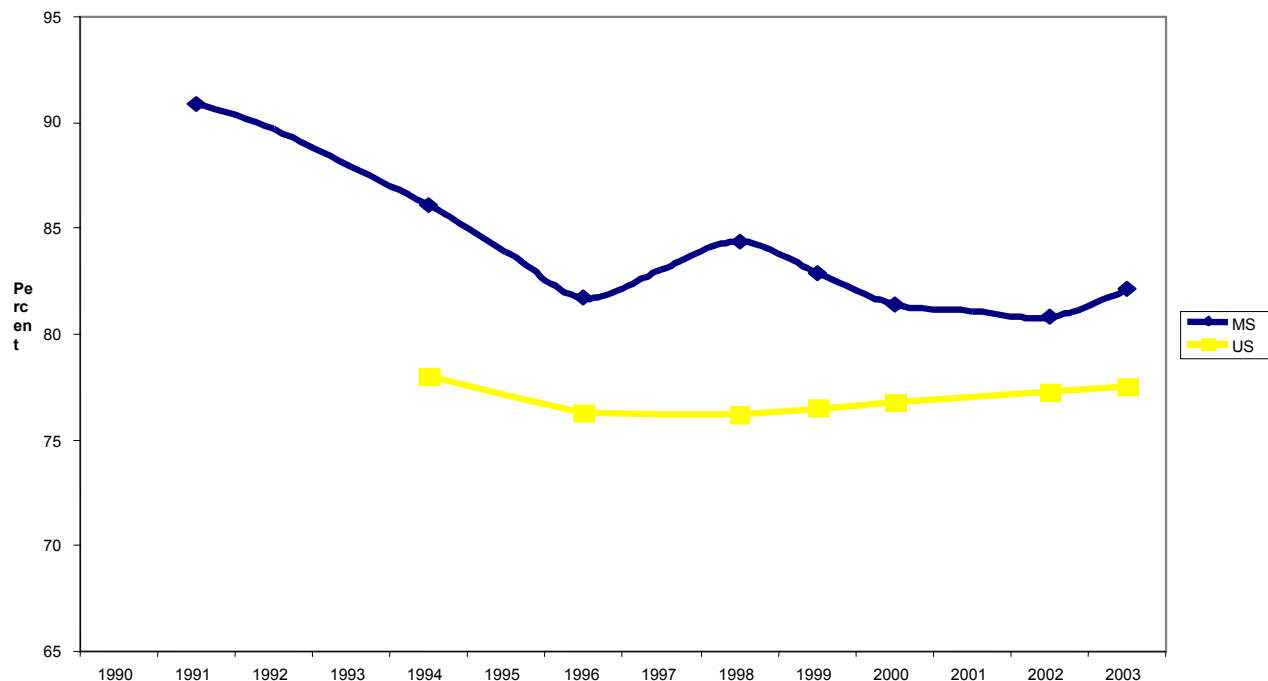
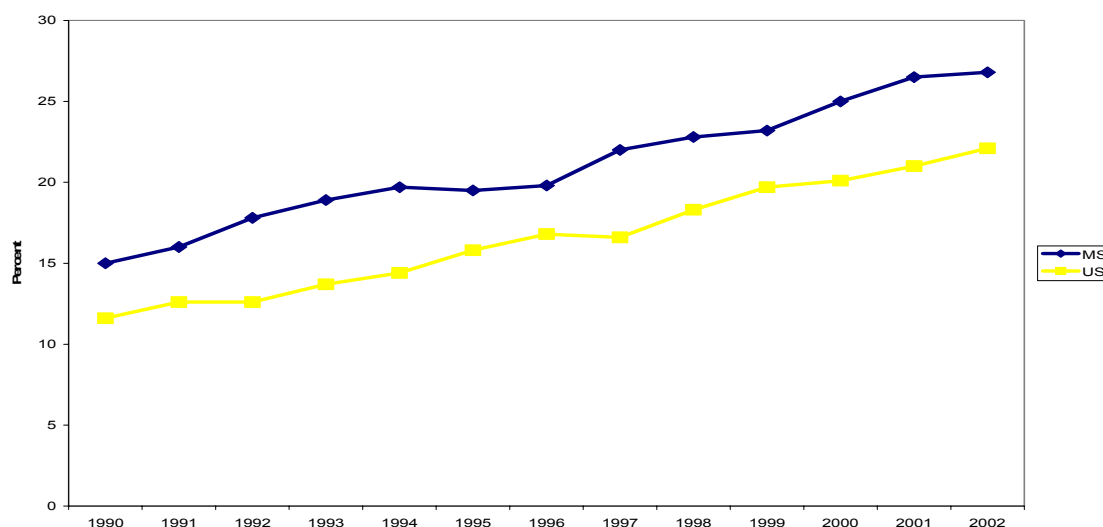


Figure 15. Obesity: By Body Mass Index, Mississippi vs. U.S., 1990-2002



Selected Cancers

Healthy People 2010 goals are designed to increase quality and years of healthy life and to eliminate health disparities. The 1998 data serves as the baseline data from which change is to be measured. The following table presents the baseline and target rates for Mississippi based on Healthy People 2010 and presents our progress through 2002 towards meeting the target.

Table 16. Healthy People 2010 Goals per Cancer Site

Cancer Type	1998 MS Rate*	Healthy People 2010 Percent Change	Healthy People 2010 Target Rate*, MS	2002 MS Rate*	Percent Change 1998 to 2002
All Cancers	226.8	21%	179.2	217.5	4.1%
Lung/Bronchus	71.4	22%	55.7	68.1	4.6%
Female Breast	26.6	20%	21.3	26.5	0.4%
Colon/Rectum	20.6	34%	13.6	22.1	-7.3%
Oral Cavity/Pharynx	3.7	10%	3.3	3.2	13.5%
Prostate	46.8	10%	42.1	40.7	13.0%
Melanoma (Skin)	2.4	11%	2.1	2.3	4.2%

*Rates are age-adjusted to the 2000 standard population, 5-year age groups

Lung and Bronchus

Incidence and Mortality: In Mississippi, an estimated 2,230 new cases are expected for 2004,

resulting in an estimated 2,060 deaths. Nationally, lung/bronchus cancers account for 13% of cancer diagnoses and 28% of all cancer deaths. The 1998-2002 age-adjusted mortality rate for lung/bronchus cancer in Mississippi was 70.1 per 100,000. This type of cancer has significantly declined in men over the past 20 years, but the female population saw an increase in incidence peaking in the 1990s. This increase in females is constant for white and non-whites. Since 1987, more women have died each year of lung cancer than from breast cancer, which for the previous 40 years had been the major cause of cancer death in women.

Sign and Symptoms: Symptoms may include a persistent cough, sputum streaked with blood, chest pain and/or reoccurring pneumonia or bronchitis.

Risk Factors: The major risk factor for lung/bronchus cancer is cigarette smoking. Smoking accounts for 87% of all lung cancer deaths. Other risk factors may include occupational or environmental exposure to some substances such as arsenic, some organic chemicals, radon and asbestos; radon exposure from occupational, medical and environmental sources; air pollution; tuberculosis; and for nonsmokers, second hand smoke.

Early Detection: Early detection has not yet been demonstrated to improve survival but chest x-ray, analysis of cells in sputum, and fiber optic examination of the bronchial passages have shown some effectiveness in lung cancer detection. Newer tests, such as low dose spiral computed tomography (CT) scan and molecular markers in sputum, can detect lung cancer earlier.

Treatment and Survival: Most treatment options are determined by the type and stage of the cancer. For localized cancers, surgery is usually the option. Because the disease has usually spread by the time it is discovered, radiation therapy and chemotherapy combined with surgery is often the course of treatment. Nationally, the one year survival rate for lung cancer has increased from 37% in 1975 to 42% in 1999, largely due to improvements in surgical techniques. The survival rate for all cases detected early when the disease is localized is 49%, but only 16% of lung cancers are diagnosed at this early stage.

Female Breast

Incidence and Mortality: An estimated 2,480 new cases of invasive breast cancer are expected to occur among women in Mississippi, resulting in 460 deaths. The 1998-2002 age-adjusted female breast cancer mortality rate for Mississippi was 27.9 per 100,000 population. White women had a lower age-adjusted rate (24.1 per 100,000 population) than non-white women (35.9 per 100,000 population). Breast cancer ranks second among cancer deaths in women. Breast cancer incidence rates have continued to increase, only in those women ages 50 and older since 1980, while mortality rates have declined. This is widely believed to be a direct result of increased use of screening with mammography, which results in early detection and improved treatment. Nationally, about 1,450 new cases of breast cancer are expected in men in 2004.

Sign and Symptoms: The earliest sign of breast cancer is usually an abnormality that shows up on the mammogram before it can be felt by a woman. When breast cancer has grown to the point of physical signs, there is often a breast lump, thickening, swelling, distortion or tenderness, skin irritation or dimpling, and nipple pain, scaliness, ulceration, retraction or spontaneous discharge. Breast pain is commonly associated with benign conditions and is not usually the first symptom of cancer.

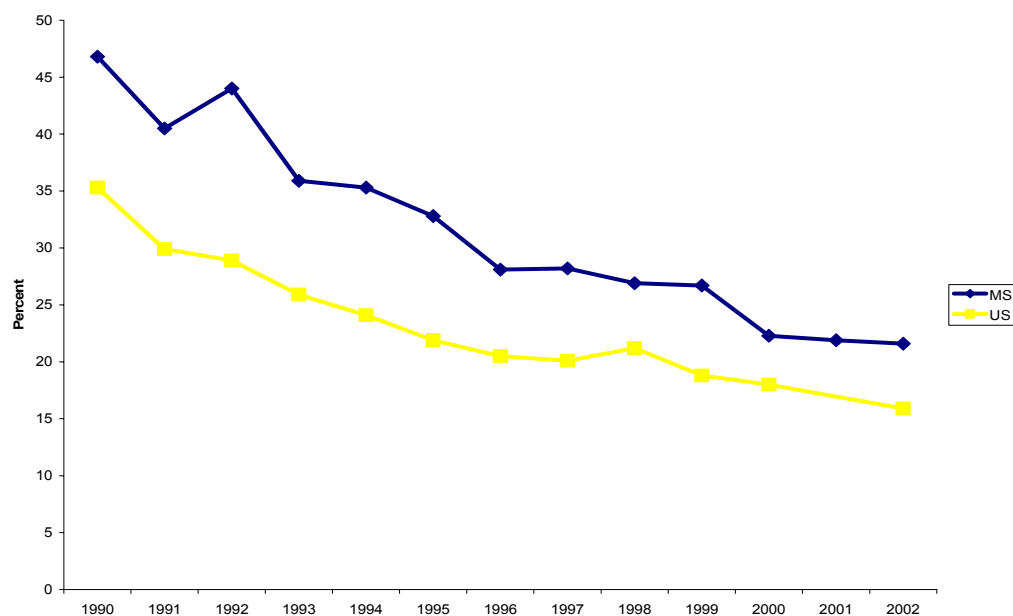
Risk Factors: In general, the risk for breast cancer increases as you age. Factors that increase your risk are: a personal family history of breast cancer, biopsy-confirmed atypical hyperplasia, significant mammographic breast density, a long menstrual history, obesity after menopause, recent use of oral contraceptives, postmenopausal hormone therapy, never having children or having one's first child after age 30, or consumption of one or more alcoholic beverages per day. Recent studies have linked certain genes (BRCA1 and BRCA2) and obesity to an increased risk of breast cancer. Breastfeeding, moderate or vigorous physical activity and maintaining a healthy body weight are all associated with lower risk.

Early Detection: The recent declines in breast cancer mortality have been attributed to the regular use of screening mammography and to improvements in cancer drugs. Mammography is especially valuable as an early detection tool because it can identify breast cancer at an early stage, usually before any physical symptoms. In 2003, 62.3 % of women in Mississippi reported

that they had ever had a mammogram. The American Cancer Society recommends that women age 40 and older have an annual mammogram and an annual clinical breast examination by a health care professional. Women in their 20's and 30's should have clinical breast examination by a healthcare professional at least every 3 years. Women who choose to perform breast self examination should receive instruction and have their technique reviewed by their health care provider.

Treatment and Survival: Treatment for breast cancer may include: lumpectomy (removal of the tumor) or mastectomy (surgical removal of the breast) and removal of the lymph nodes under the arm if the cancer has spread or is believed to have spread. Radiation therapy, chemotherapy, or hormone therapy are other treatment methods. Many times, these methods will be used in combination. Patients should discuss possible options for the best management of their breast cancer with their physicians. Significant advances in breast reconstruction after mastectomy offer several options for the patient. The five-year survival rate for localized breast cancer has increased to 97%. If the cancer has spread regionally, the rate is 79% and for women with distant metastases, the rate is 23%.

Figure 17. No Mammogram or Breast Exam, Mississippi vs. U.S., 1990-2002



Uterine Cervix

Incidence and Mortality: An estimated 110 cases of invasive cervical cancer are expected to be diagnosed in Mississippi in 2004. Incidence rates and mortality rates have decreased over the past decade for white and non-white women. Based on 1998-2002 age-adjusted cancer mortality rates in Mississippi, non-white women have a higher rate of cervical cancer mortality (6.3 per 100,000 population) than white females (2.7 per 100,000 population).

Sign and Symptoms: Symptoms usually don't appear until abnormal cervical cells become cancerous and invade nearby tissues. When this happens, the most common symptom is abnormal vaginal bleeding. The bleeding may start and stop or it may occur after sexual intercourse, douching or a pelvic exam. Menstrual bleeding may also be heavier than normal. Bleeding after menopause or increased vaginal discharge may also be symptoms.

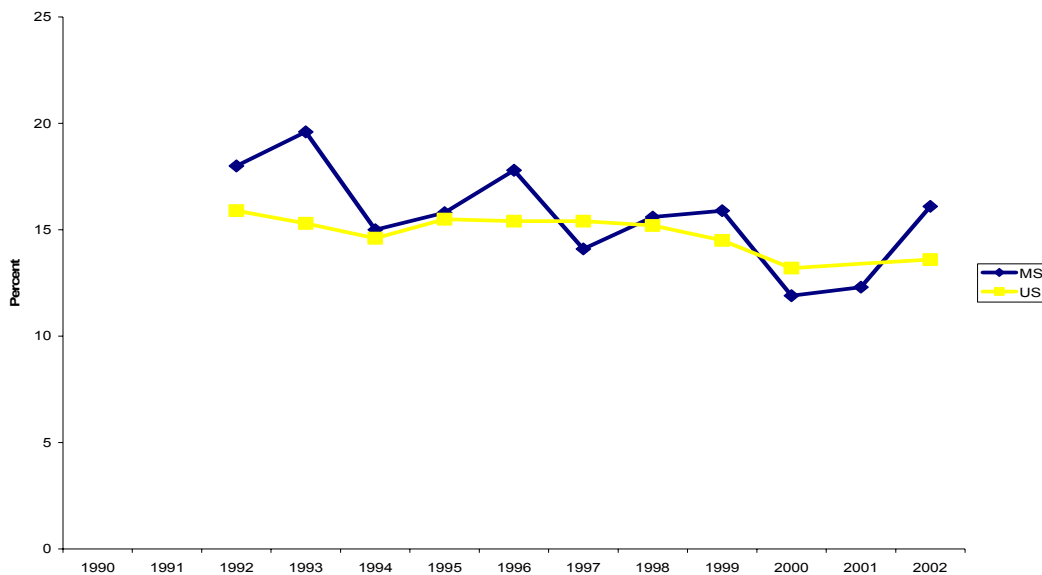
Risk Factors: Cervical cancer risk is directly related to sexual behavior and to sexually transmitted infections with human papilloma virus. Other risk factors are: sex at an early age, many sexual partners, cigarette smoking, and being overweight.

Early Detection: The Pap test is a simple procedure of early detection and can be performed by your healthcare professional as part of your yearly pelvic exam. The American Cancer Society recommends cervical cancer screening should begin approximately 3 years after a woman begins having vaginal intercourse, but no later than 21 years of age. At or after age 30, women who have had 3 normal test results in a row may get screened every 2-3 years. Women 70 years of age and older who have had 3 or more normal Pap tests and no abnormal Pap tests in the last 10 years may choose to stop cervical cancer screening. Screening after a hysterectomy is not necessary unless the surgery was done as a treatment for cervical cancer or pre-cancer. In 2003, 95.1% of women in Mississippi reported they had ever had a Pap test and only 86.0% of women reported having a Pap test in the past 3 years. Statistics show that white women are more likely than non-whites to be diagnosed at an early stage.

Treatment and Survival: For pre-invasive lesions, changes in the cervix may be treated by electrocoagulation, cryotherapy, laser ablation or by local surgery. Invasive cervical cancers

generally are treated by surgery, radiation, chemotherapy or a combination. Survival for persons with pre-invasive lesions is nearly 100%. When detected at an early stage, invasive cervical cancer is one of the most successfully treated cancers with a 5-year survival rate of 92% for localized cancers. Overall 5-year survival rate for cervical cancer is 71%.

Figure 18. No Pap Smear within 3 Years, Mississippi vs. U.S., 1990-2002



Colon and Rectum

Incidence and Mortality: In the U.S., an estimated 106,370 colon and 40,570 rectal cancer cases are expected to occur in 2004, resulting in 56,730 deaths. The 1998-2002 age-adjusted colon/rectum cancer mortality rate in Mississippi was 22.1 per 100,000 population. This type of cancer accounts for about 10% of cancer deaths. Colorectal cancer is the third most common cancer both in men and in women. Incidence and mortality rates have declined since 1998. Research suggests that these declines may be in part due to increase screenings and polyp removal thus preventing the progression of polyps to invasive cancers.

Sign and Symptoms: Colorectal cancer usually causes no symptoms in its early stages. Rectal bleeding, blood in the stool, a change in bowel habits, and cramping pain in the lower abdomen may signal advanced disease.

Risk Factors: The primary risk factor for colorectal cancer is age, with more than 90% of cases diagnosed in individuals over the age of 50. Other risk factors include: a personal or family history of colorectal cancer or polyps or inflammatory bowel disease, smoking, alcohol consumption, obesity, physical inactivity, a diet high in fat and/or red meat, as well as inadequate intake of fruits and vegetables. Recent studies have shown a correlation between estrogen replacement therapy and non-steroidal anti-inflammatory drugs and a reduced risk of colorectal cancer.

Early Detection: Beginning at age 50, men and women who are at average risk for developing colorectal cancer should have one of the following: fecal occult blood test annually (FOBT); or flexible sigmoidoscopy every 5 years; or the combination of an annual FOBT and flexible sigmoidoscopy every 5 years; a colonoscopy, if normal, every 10 years, or a double-contrast barium enema. People should begin colorectal cancer screening earlier and/or undergo screening more often if they have a personal history of colorectal cancer or adenomatous polyps, a strong family history of colorectal cancer, a personal history of chronic inflammatory bowel disease, or if they are a member of a family with hereditary colorectal cancer syndrome.

Treatment and Survival: Cancers that have not spread are commonly cured by surgery. Chemotherapy or chemotherapy with radiation can be given prior or after the surgery to patients whose cancer has spread to the bowel wall or the lymph nodes. A permanent colostomy is very rarely needed and is more common with cancer of the rectum. When this type of cancer is detected at an early, localized stage, the 5-year survival rate is 90%; however, only 37% of colorectal cancers are discovered this early. The 1 and 5 year relative survival rates for patients with colon and rectum cancers are 83% and 62%, respectively.

Oral Cavity and Pharynx

Incidence and Mortality: Nationally, an estimated 27,700 new cases are expected to be diagnosed in 2003, resulting in 7,200 deaths. The 1998-2002 age-adjusted cancer mortality rate for oral cavity/pharynx cancer in Mississippi was 3.7 per 100,000 population. Incidence rates are more than twice as high in men as in women and are greatest in men over age 50. Currently, incidence rates are on the decline for all races and all sexes.

Sign and Symptoms: Some symptoms associated with oral cavity or pharynx cancers are: a sore that bleeds easily and doesn't heal, a lump or thickening or a red or white patch in the mouth or throat. Other symptoms are difficulties in chewing, swallowing, or moving tongue or jaws.

Risk Factors: The most common risk factors are tobacco related such as cigarette use, cigar use, pipe smoking, or smokeless tobacco use. Excessive alcohol consumption may also increase your risk.

Early Detection: Dentists or primary care physicians can identify abnormal changes in oral tissues (lip, tongue, mouth, and throat) and detect cancer at a curable stage.

Treatment and Survival: Radiation therapy and surgery are standard treatments. For all stages combined, about 84% of oral cavity and pharynx cancer patients survive 1 year after diagnosis.

Prostate

Incidence and Mortality: An estimated 2,900 new cases will occur in Mississippi in 2004, resulting in 300 deaths. Prostate cancer incidence and mortality rates remain significantly higher in African American men than in white men. In Mississippi, the age-adjusted prostate cancer mortality rate for non-white men (81.2 per 100,000 population) was 177% higher than the rate for white men (29.3 per 100,000 population). Between 1988-1992, prostate cancer incidence rates increased dramatically, due to earlier diagnosis through early detection. Since then, incidence rates have declined and have leveled off, especially in the elderly.

Sign and Symptoms: Early prostate cancer usually has no symptoms. With more advanced disease, individuals may experience weak or interrupted urine flow, inability to urinate, difficulty starting or stopping the urine flow, the need to urinate frequently, blood in the urine, pain or burning during urination or continual pain in the lower back, pelvis or upper thighs.

Risk Factors: The only well-established risk factors for prostate cancer are age, ethnicity, and family history of prostate cancer. More than 70% of all prostate cancer cases are diagnosed in men over age 65 with non-white men having the highest prostate cancer incidence rates.

International studies suggest that dietary fat may also be a risk factor.

Early Detection: The prostate-specific antigen (PSA) test and the digital rectal examination should be offered annually beginning at age 50 to men who have a life expectancy of at least 10 years. Men at high risk should begin testing at age 45.

Treatment and Survival: Surgery and radiation could be therapy options depending on the age of the patient, stage of the disease and other medical conditions of the patient. Careful observation without immediate active treatment may be appropriate, particularly for older individuals. Hormone treatment may control prostate cancer for long periods by shrinking the tumor, thus relieving pain and other symptoms. Statistics show that 86% of all prostate cancers are discovered in the local and regional stages; the 5-year survival rate for patients whose tumors are diagnosed at these stages is 100%.

Skin

Incidence and Mortality: More than 1 million cases of highly curable basal cell or squamous cell cancers occur annually. The most serious form of skin cancer is melanoma, which is expected to be diagnosed in 543,200 persons in the U.S. in 2003, resulting in 7,600 deaths. The 1998-2002 age-adjusted mortality rate for Mississippi was 2.3 per 100,000 population. Incidence rates have increased since the 1970's. Melanoma is primarily a disease of whites with rates 10 times higher as compared to African Americans.

Sign and Symptoms: Any change on the skin, especially in the size or color of a mole, may be a sign. Other symptoms include: scaliness, oozing, bleeding, or change in appearance of a bump/mole, spread of pigmentation beyond its borders, a change in sensation, itchiness or tenderness and pain of a mole.

Risk Factors: Excessive exposure to ultraviolet radiation from sunlight or tanning lamps is a major risk factor. Being fair-complected and having a family history of skin cancer also increases your risk of skin cancer. Other risks include occupational exposure to compounds such as coal, tar, pitch, creosote, arsenic, or radium. It is recommended that one limit or avoid

exposure to the sun during the midday hours (10 a.m. – 4 p.m.). When outdoors, wear a hat that shades the face, neck and ear, long sleeved shirt and pants, sunglasses to protect the skin around the eyes, and use sunscreen with a sun protection factor of 15 or higher. Research has shown that severe sunburns in childhood may greatly increase risk of melanoma in later life, so parents should protect their children from the sun.

Early Detection: Recognition of changes in skin growths or the appearance of new growth is the best way to find early skin cancer. Adults should practice skin self – examinations regularly, looking for changes in size and appearance of growths. Suspicious lesions should be evaluated by a physician.

Treatment and Survival: In 90% of cases, the normal treatment includes surgery, such as electrodesiccation, cryosurgery, and laser therapy. Radiation therapy is also an option in some cases. When detected early and treated properly, it is highly curable. The 5-year survival rate for patients with melanoma is 90%. About 82% of melanomas are diagnosed at a localized stage.

Cancer Disparities

A substantial body of scientific literature documents racial/ethnic and low-income population differences in risk factors and exposures for behavioral, environmental and other factors related to cancer. Access to, and delivery of, quality health care and differences in cancer screening, follow-up, treatment, palliative care, and pain management are all factors related to racial/ethnic and geographic disparities in cancer rates. These health care factors play a pivotal role in cancer prognosis, stage, survival, mortality and recurrence for minorities and the poor.

In Mississippi, increasing attention is being placed on reducing and eliminating disparities within health. While major efforts are underway to define and describe disparities, the identification of specific factors that cause disparities, and how these factors are interrelated is complex and poorly understood. Interventions to reduce these disparities are even more poorly understood. As on the national level, Mississippi cancer disparities occur in a variety of categories including racial/ethnic, geographic, gender, age, and socioeconomic groups.

Cancer Disparities and Race

Racial and ethnic minorities and underserved communities in Mississippi suffer distinct disadvantages in accessible health care services for cancer prevention, screening and follow up, early detection and treatment. Racial/ethnic disparities in cancer mortality and cancer type distribution can be found in Figures 17 and 18. While Mississippi has a diverse population, data on disparities have focused on the two largest segments of the population, African American and whites which make up 99% of the state's population. Because of this fact, this document will use white and non-white for comparisons.

Non-whites in Mississippi have the highest overall cancer mortality rates, as well as, the highest mortality rates for many specific cancer sites, including the highest rates for colorectal, oral cavity and pharynx, esophagus, stomach, liver, pancreas, larynx, female breast, cervix, uterus, prostate, and multiple myeloma. In general, non-whites are diagnosed with cancer at later stage than whites.

Figure 19. African Americans by County, Mississippi, 2000

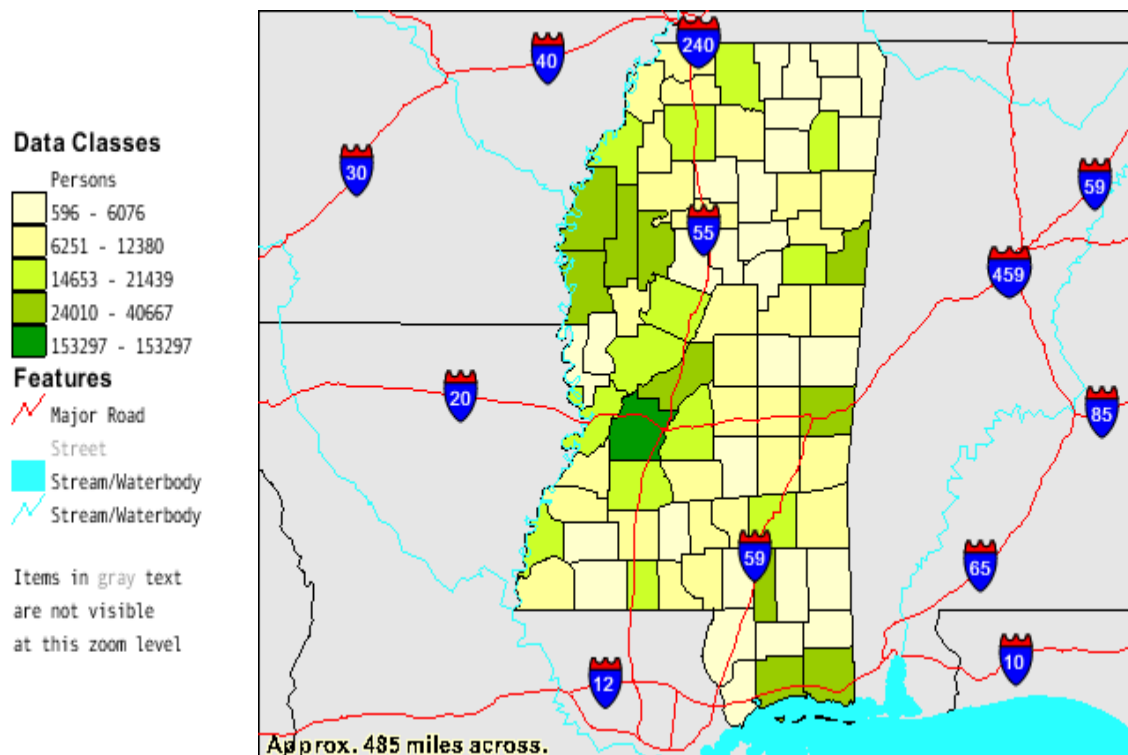


Table 20. Cancer Mortality for Mississippi, White vs. Non-white, 1998-2002

SITE	All Whites		All Non-Whites		Total	
	Cases	Rate*	Cases	Rate*	Cases	Rate*
Oral Cavity and Pharynx	320	3.2	182	4.7	502	3.7
Esophagus	333	3.3	218	5.8	551	4.0
Stomach	322	3.3	342	9.1	664	4.9
Small Intestine	35	0.4	17	**	52	0.4
Colon and Rectum	1,923	19.6	1,061	28.6	2,984	22.1
Liver	522	5.4	221	5.9	743	5.5
Pancreas	1,018	10.3	554	15.1	1,572	11.6
Larynx	114	1.1	70	1.9	184	1.3
Lung and Bronchus	7,011	70.4	2,501	68.1	9,512	70.1
Melanoma (Skin)	289	3.0	17	**	306	2.3
Female Breast	1,322	24.1	821	35.9	2,143	27.9
Cervix Uteri	136	2.7	145	6.3	281	3.7
Uterus	135	2.4	162	7.3	297	3.7
Ovary	484	8.6	192	8.6	676	8.6
Prostate	993	29.3	1,051	81.2	2,044	43.4
Testis	15	**	4	**	19	**
Urinary Bladder	393	4.0	112	3.1	505	3.8
Kidney and Renal Pelvis	445	4.5	164	4.3	609	4.5
Endocrine	82	0.9	37	0.9	119	0.9
Multiple Myeloma	322	3.2	227	6.3	549	4.1
Leukemia	827	8.5	269	6.8	1,096	8.1
Brain and Other Nervous System	604	6.3	155	3.9	759	5.6
Hodgkin's Disease	56	0.6	17	**	73	0.5
Non-Hodgkin's Lymphoma	804	8.2	180	4.7	984	7.3
Other Cancer	2,013	20.6	881	23.3	2,894	21.4
All Cancers	20,518	208.7	9,600	257.4	30,118	222.7
*Rates per 100,000 population and age-adjusted to the 2000 standard population 5-year age groups.						
**Rates based on less than 20 cases are unstable and therefore suppressed.						

Geographic Disparities

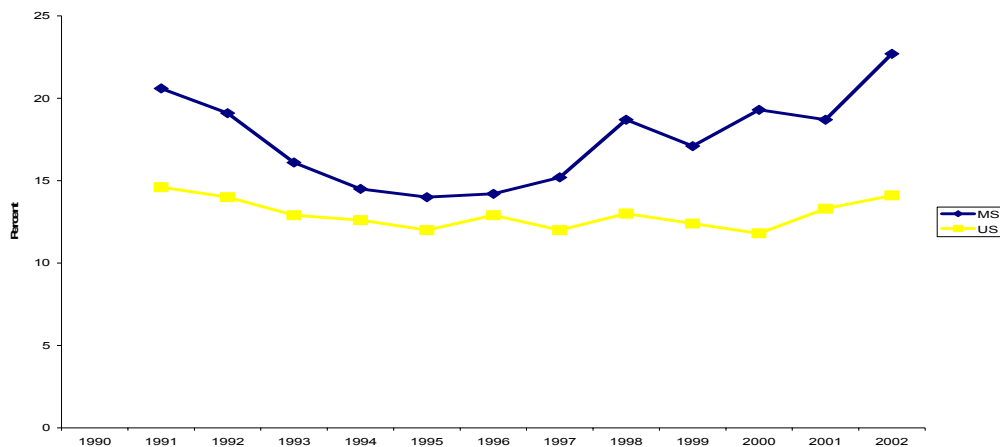
Mississippi is a geographically diverse state of 82 counties with a total land area of nearly 46,907 miles. The population in the 2000 Census was nearly 2.8 million residents in 290 incorporated cities, towns and communities. The population ranges from 1,283 in Issaquena county to 242,079 in Hinds county, with 53% of Mississippian's living in rural areas. Less than 20% of the people live in a city with a population of 25,000 or more, and only one-third live in a city of 10,000 or more. The state has three standard metropolitan statistical areas (MSA): the Gulf Coast (Hancock, Harrison, and Jackson counties), Jackson (Hinds, Madison, and Rankin counties), and the Hattiesburg area (Forrest and Lamar counties). The Southaven-Desoto county area is in the Memphis MSA.

Populations from rural counties experience health disparities based partially on the isolated location and reduced access to resources and income, and population size. Barriers to cancer prevention, detection, diagnosis, and treatment exist in Mississippi's rural and urban communities. In Mississippi, 91.8% of rural counties have poverty rates exceeding 16%. Rural communities have high rates of uninsured residents; have high numbers of elderly residents, lack public transportation, and lack access to primary and specialty health care. Urban areas also have transportation barriers, high Medicaid rates, and cultural and linguistic barriers.

Insurance Status and Disparities

Health insurance status is a strong predictor of access to health care. Persons with health insurance are almost twice as likely to have an annual physical examination which includes cancer prevention and screening as persons without health insurance. The number of uninsured Mississippian's decreased from 1990- 1995 but has been on a steady increase since then. Accordingly to the 2003 BRFSS, 19.0% of Mississippians were without health insurance.

Figure 21. No Health Insurance Coverage, Mississippi vs. U.S., 1990-2002



Socioeconomic Status and Disparities

Socioeconomic status (SES) is one of the major determinants of health. According to the U.S. Department of Health and Human Service's Healthy People 2010 report, higher socioeconomic groups experienced greater health gains compared to lower socioeconomic groups. Lower SES

has been associated with higher cancer risk behaviors, as well as, poorer cancer outcomes, particularly for cancers of the breast, colon and prostate. Cancer mortality rates in the U.S. are significantly higher in the lower socioeconomic groups. Contributing factors associated with lower SES may include lower educational level, culture, ethnic/cultural beliefs, and access to adequate health care. In Mississippi, 27.1% of the population has less than a high school education (18.4% of U.S.) with approximately 18.6% of the population over 25 years of age holding a bachelor's degree or higher. Mississippi ranked 49th among the states in per capita income (\$15,853 per Mississippian) and 48th in median family income (\$31,330 per Mississippi family) according to the 2000 Census. Currently, 19.9% of Mississippians are below poverty level.

Overall cancer mortality rates for Mississippi have shown a steady decrease since 1999, but racial minorities continue to demonstrate significant cancer disparities throughout Mississippi. Socioeconomic status as a major contributor to health status and cancer disparities must be addressed as part of a comprehensive approach to eliminate cancer disparities throughout the state.

Figure 22. Percent of Population with an Education Level of Less than 9th Grade by County, Mississippi, 2000

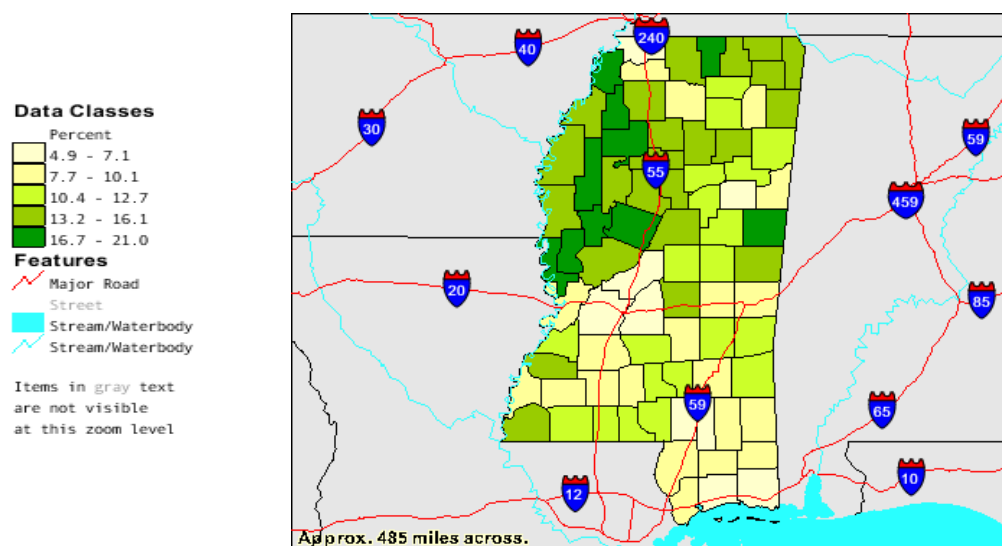
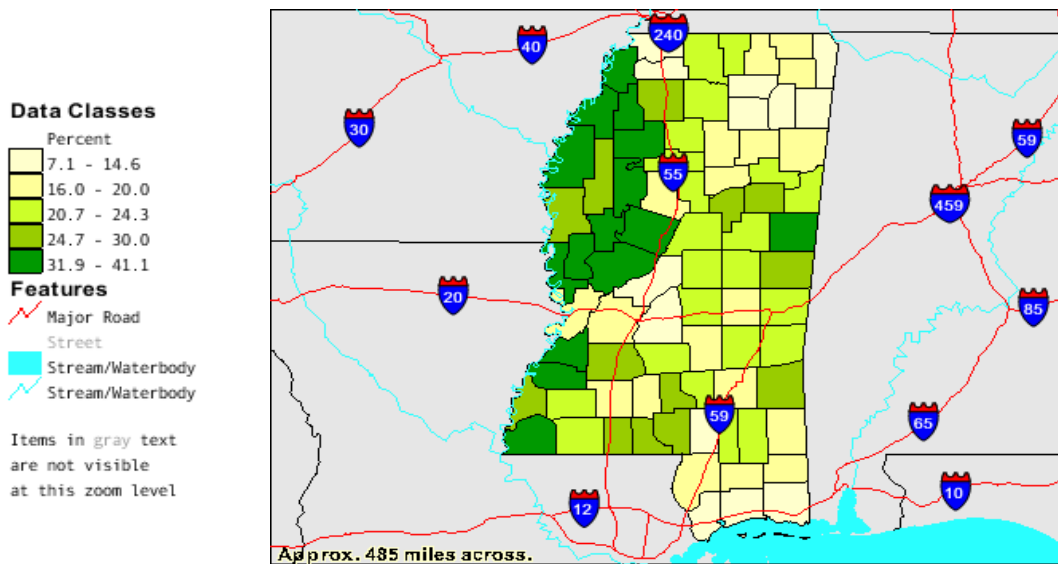


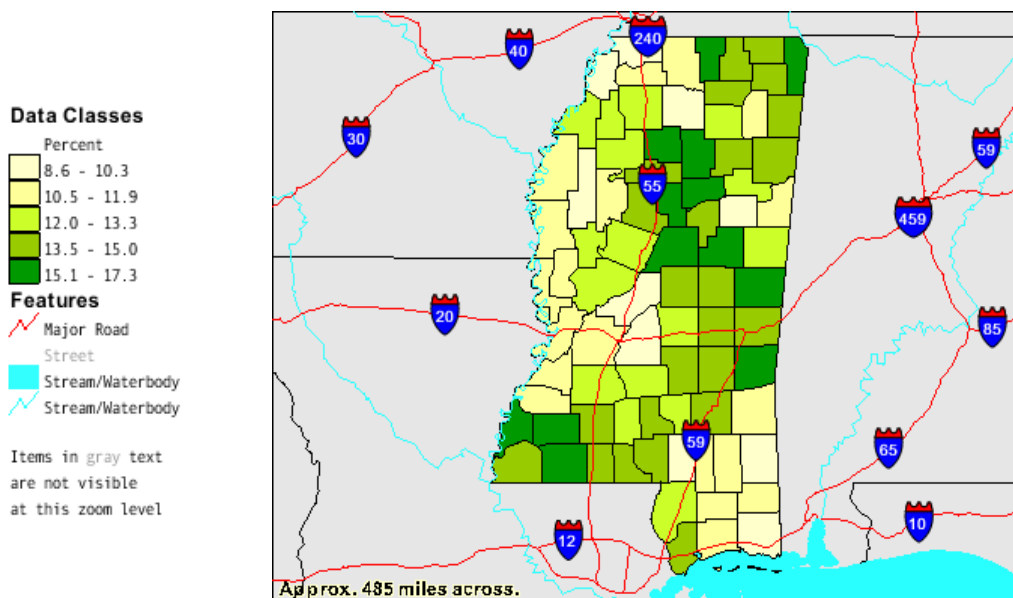
Figure 23. Percent of Population below Poverty Level by County, Mississippi, 2000



Age and Disparities

The majority of cancers in the United States occur in people aged 65 and older. Senior citizens (i.e. individuals 65 years and older) make up only 12.1% of Mississippi's population however, 66.3% of all cancer deaths in 2002 were from this age group.

Figure 24. Percent of People over the Age of 65 by County, Mississippi, 2000



Summary and Conclusions

This report summarizes the most recent information available on cancer associated health risk behaviors in Mississippi. According to 2001 data, cancer mortality rates in Mississippi are the fifth highest in the U.S. There is a wide variation in mortality rates between counties, and in some counties, cancer mortality rates have actually increased. Marked racial disparities exist in the cancer mortality rates throughout the state. A considerable amount of cancer mortality is premature, especially in non-whites.

Cancer mortality rates have been declining in Mississippi since 1999 but they are not declining as fast as rates elsewhere. The decline has occurred in all age and racial/ethnic groups and both genders, and is presumably due, at least in part, to healthier lifestyles, a lower prevalence of cancer risk factors such as smoking and high blood pressure in the population, and improvements in medical care. However, cancer mortality rates are high in Mississippi, and why are they not declining as fast as rates elsewhere? This cannot be fully explained with the available data. A mortality rate reflects both incidence of disease (the rate of development of new cases) and survival after disease has developed (which in turn reflects the severity of the disease and the effect of treatment). Changes in either or both of these will affect mortality. It is not known whether the high cancer mortality rates in Mississippi are due to high incidence (more new cases of cancer), more severe disease, poorer survival of persons with cancer, or some combination of these factors.

Whatever the gaps in our knowledge, it remains clear that further decreases in cancer mortality rates will not be achieved unless racial/ethnic and geographic disparities are reduced. Further work is needed to identify and quantify differences in the availability of, access to, and quality of medical care for persons with cancer, and to identify and if possible, eliminate any barriers. Also, much of the death and disability due to cancer is preventable. Primary prevention needs to be emphasized very strongly, to reduce the prevalence of cancer risk factors in the population: more Mississippians need to stop smoking, become more active, lose weight, and eat a healthier diet. This prevention must start at an early age since many of these risk factors are rooted in childhood behaviors.

Some of the death, illness, and disability due to cancer is preventable, but it will not be prevented without population-wide actions to create and maintain healthy environments, policies, and norms. Cancer doesn't discriminate, so it is imperative that we work together on various local, state, and national levels to make a positive impact on the entire spectrum of the disease.

Appendix:

Methods and Definitions

Methods

Cancer mortality numbers are based on death certificate data provided by the Office of Health Informatics, Mississippi State Department of Health (MSDH). The ICD-9 codes for cancer are 140-210, and the ICD-10 codes for cancer are C00-C97. Crude mortality rates are calculated using the number of deaths divided by the appropriate population obtained from the Office of Health Informatics. Crude rates are age-adjusted by the direct method using the 2000 U.S. Standard Million population, 5-year age groups. The rates will differ from those reported by the Office of Health Informatics because they use the 10-year age groups when age adjusting.

Incidence data is not presently available for Mississippi, so only estimates of incidence obtained from the American Cancer Society's *Cancer Facts and Figures* are used in this document along with national incidence obtained from the National Institute of Health (NIH).

Risk factor estimates are based on self-reported data from the Mississippi Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a continuous statewide, random-digit-dialed telephone survey of a representative sample of the Mississippi civilian non-institutionalized adult population (18 years of age and older). The BRFSS collects data on a number of health risk behaviors, including smoking and physical activity/ exercise patterns. Respondents are also asked to report weight and height, from which body mass index (BMI) can be calculated. Additionally, respondents are asked for information on mammography and Pap smear utilization.

Risk factor estimates for youth are obtained from the Youth Risk Behavior Surveillance System (YRBSS) and the Youth Tobacco Survey (YTS). Both are self-administered surveys given to a random sample of classes within randomly selected schools. The YRBSS is conducted in the spring semester of odd years, and the Youth Tobacco Survey was conducted in the spring semester of even years. The YTS is now conducted in the fall semester of odd years. The YRBSS collects data on many health behaviors such as drugs, alcohol, tobacco, etc. Data has

been collected for public high school students (grades 9-12) since 1990 and public middle schools (grades 6-8) were added in 2001. The YTS collects data strictly on tobacco use. Data has been collected for public high school and middle school students and private high schools students since 1998. Private middle schools were added in 2000. The 2003 survey successfully collected public health district data for public school students for most public health districts.

Race Categories

The two categories of race used in this report are “white” and “non-white.” The population of people other than white and black make up approximately one percent of the population. Only a small number of this population is represented in the survey sample making separate analysis impossible.

Definitions

Age-adjusted death rate: a crude death rate that has been adjusted statistically (standardized to a reference population) to allow comparisons of rates from different time periods, places, or populations.

Incidence: the number (expressed as a rate) of new cases of a disease in a population.

Current smoking: defined as having smoked at least 100 cigarettes in one’s lifetime and smoking now (every day or only some days).

Overweight/obesity: defined as having a body mass index (BMI) equal to or greater than 25.0 kg/m². Using weight in kilograms and height in meters, BMI equals weight divided by the square of the height. Using weight in pounds and height in inches, BMI equals weight multiplied by 705 and divided by the square of the height.

No regular exercise: defined as not taking any exercise at all in the past month.